

Emerson Science Fair 2017-2018

The Science Fair is on again with awards, trophies, and prizes for the best projects!

We emphasize the following for all Science Fair projects:

Originality - We encourage original projects that the student thinks up on their own, even if it ends up being found later on the Internet or in a science-project book.

Ownership - Each student who submits a project will be presenting it in front of judges, so if they did not initiate and lead the work, it will be obvious during the presentation. Getting help is encouraged, but each student must do the majority of the work themselves. Remember to acknowledge any help.

Personal Interest - We encourage students to devise projects that spring from their personal interests. Even if it is not a traditional science topic, ANYTHING can be researched using scientific methods!

Use of the Scientific Method - Did the project reflect the logic and methods of science so that questions raised were answered confidently? Is there one¹ clear dependent measure that reflects the outcome measure you are looking for? Is there one² well-defined independent variable? Did you make sure no other variables could be responsible for changes in your outcome (control variables)?

Additional consideration in the judging will be given to clarity of the project question, description of how the question was tested, and presentation of data. Also important are appropriate use of measurements, honesty in acknowledgements, and citing of references.

There are three keys to a great project:

1. Do the science! Follow your interests to a scientific question that you can answer with an experiment and document your project clearly on a display board.
2. Be able to explain your project and findings clearly in 5 minutes to the judges.
3. **Know your project!** Do most of the work **yourself**, as you alone will be answering judges' questions.

¹ Experiments can, and often do, have MORE than one Dependent Measure (DM), but focusing on one DM helps simplify the initial experimental design; after the initial design, additional Dependent Measures can be considered.

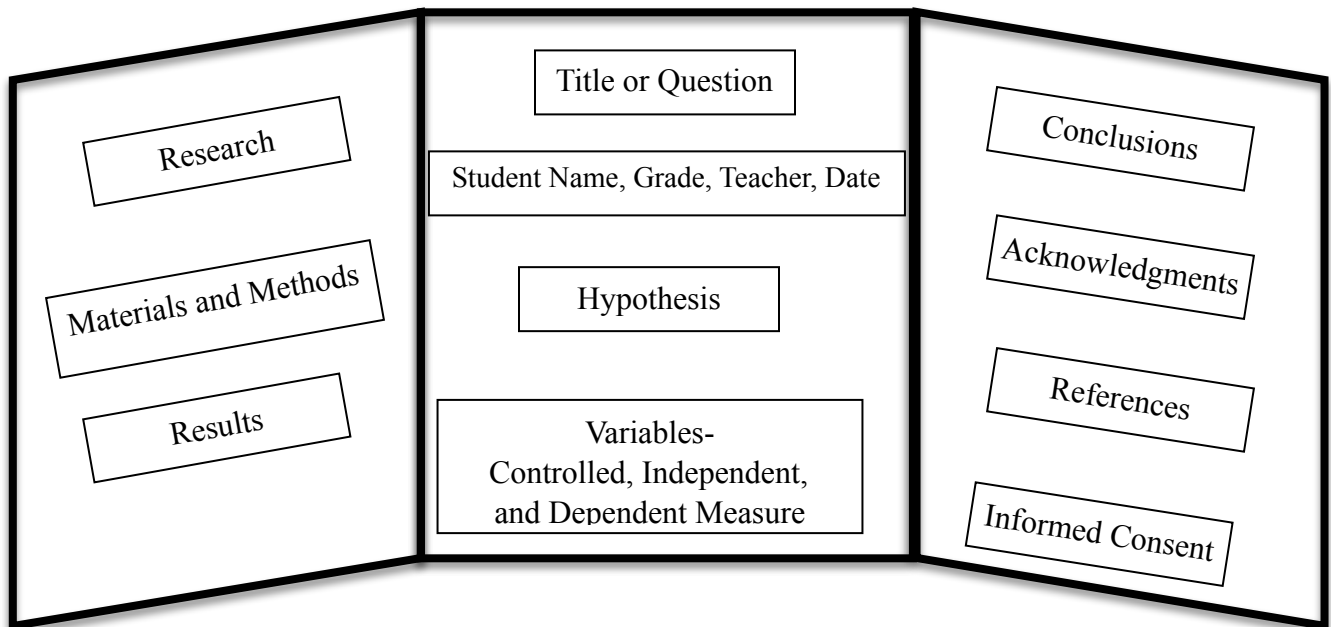
² Experiments can have MORE than one Independent Variable, but a proper design of the experiment becomes complex and analysis of data collected can be far more challenging.

Science Fair Rules

1. ALL EXPERIMENTS MUST BE SAFE! Experiments with explosives, dangerous chemicals, or drugs will not be allowed. All electrical equipment must conform to electrical safety laws.
2. Animals may be used in experiments. However, ABSOLUTELY NO HARM, DANGER, or DISCOMFORT may be done to them.
3. Experiments involving humans are permitted, but there can be ABSOLUTELY NO HARM, DANGER, or DISCOMFORT to the human. You must get written signed permission from each human subject before you perform the experiment. If the human subject is a minor (under 18 years old), you must get their parent's written permission for them to participate. The originals of the permission forms must be attached to the display board.
4. Demonstration projects are not allowed (e.g., a "volcano"). Also, projects that have been over-represented in science fairs (e.g., Mentos in Diet Coke) will not be approved.

What Your Display Board Should Include

There are many ways to clearly present your project on a display board and you are free to choose the way that you feel accomplishes this best. However, there are a few things that you should include on your display board to save time explaining your project to the judges and to



make it clear to everyone who sees your display board what you wanted to find out, how you did it, and what you learned. Here's what most project display boards should include:

Title or Question - The question your project was trying to answer. This also makes a great Title. (If you use it as your Title, you do not need to also have a "Question" section on your poster.)

Student Name, Grade, Teacher, Date - Please put this information on the front AND back of the board.

Hypothesis - Describe what you thought would happen before you did the experiment.

Variables (Controlled, Independent, and Dependent Measure) - The variables are any factors that can change in an experiment. Remember that when you are testing your experiment you should only **test one variable at a time** in order to get accurate results. In other words, if you want to test the affect that water has on plant growth, then all the plants you test should be in the same conditions, these are called **controlled variables**: same type of dirt, same type of plant, same type of location, same amount of sunlight, etc. The only variable you would change from plant to plant would be the amount of water it received. This is called the **independent or manipulated variable**. The independent variable is the factor you are testing. The results of the test that you do are called the **dependent or responding variables**. The responding variable is what happens as a result of your test. Knowing what your variables are is very important because if you don't know them you won't be able to collect your data or read your results.

Research- Share any background information you found when researching your topic.

Materials and Methods- Describe exactly how you did this experiment. Tell what equipment, materials, and procedures you used. This is like a recipe for your experiment. Be detailed enough so that another person could repeat your experiment. Use lists and photos to help make it clear how you did your experiment.

Results - Describe what you found out from your experiment. Present the data you collected from your experiment in photos, graphs, and/or tables that will help people understand your results.

Conclusions - Tell what the answer to your question was. Was your hypothesis proved or disproved? If your hypothesis was not correct, why do you think you got a different answer than you expected? If your hypothesis was correct, why do you think it was correct? This is a good place to make a brief comment about what you learned.

Acknowledgements - List all the people who helped you with the project, and thank them.

References - List any books, articles, or websites that you used to help you with your project.

Informed Consent - If you used human subjects, attach a written signed consent form from each participant (and/or parent). These forms should be placed in an envelope attached to the back of the board.

Helpful Information

- The following website is very useful. It can guide you through the entire Science Fair process, from project idea to presentation.
<https://dl.dropboxusercontent.com/u/28183747/ScienceFairGuide%202013.pdf>
- 5th grade students are **REQUIRED** to turn in a Science Fair project. Some 4th grade teachers may require or give extra credit for turning in a Science Fair project- talk to your

teacher. Any Emerson student may participate! Awards will be given for 1st, 2nd, and 3rd place for each grade.

- Projects may be done in pairs (maximum of two students), but workload must be shared equally.
- Students will present their project display boards to judges. Do your best to explain your project and findings clearly in 5 minutes.
- Investigation projects (summarizing facts about a particular topic) **will only be allowed for grades K-4!** They will be eligible for Honorable Mention, but not Place awards. Investigation is only the first step in experimental science.
- Students may bring in apparatus used during the project on presentation day **if it has been approved by their teacher.**
- **Parent volunteers for the Fair are greatly appreciated!** Please contact either Magdalena Munro at missmunro@gmail.com, or Melissa Burton at yogiburton@gmail.com.

Additional resources:

Sample Human Subject (Participant) Consent Form:

<http://www.lascifair.org/wp-content/uploads/2014/09/Jr-Div-Human-Consent-Form.doc>

Helpful Sites:

<http://www.jpl.nasa.gov/edu/teach/activity/how-to-do-a-science-fair-project/>

<http://www.usc.edu/CSSF/FAQ/WhatJudgesWant.html>

<https://www.google-science-fair.com/en/>

Timeline

November 17, 2017, Friday: All Science Fair APPLICATIONS are due

(online- www.emersonstarspta.org/event_sciencefair.html; paper- at the front desk)

December 22, 2017, Friday: Initial Approval and feedback will be given

February 2, 2018, Friday: Completed DISPLAY BOARDS are due in classroom

February 5-23, 2018: Science Fair Presentations- Preliminary and Final Judging

TBD: Science Fair Assembly and Awards

Science Fair Project Idea Approval Application

Applications Due: **Friday November 17, 2017** Completed projects due: **Friday, Feb 2, 2017**

All Fields are **REQUIRED** except Student 2 data if student is doing project alone.

Student 1		Student 2 (if doing project with a partner)	
Student's Name:		Student's Name:	
Parent's Name:		Parent's Name:	
Phone Number:		Phone Number:	
E-Mail:		E-Mail:	
Teacher:	Grade:	Teacher:	Grade:

Your **Question** (What do you want to find out?)

Your **Hypothesis** (What answer do you expect to your question?)

Your **Methods** (Briefly describe your experiment and what equipment and materials you will use to test your hypothesis.)

Dependent Measure(s): _____ Independent Variable(s): _____

Where did you get the idea for your project? (e.g., note website, if from the Internet)

I acknowledge awareness of my child's science project and will support them in accomplishing it.

Parent's Name of Student 1: _____

Parent's Name of Student 2: _____

Contact Magdalena Munro, missmunro@gmail.com, or Melissa Burton, yogiburton@gmail.com, with any questions.